how extremely sensitive the enzymes are to antiseptic and toxic substances; we have not heard of magnetism or electricity being affected in a like manner. But whatever the truth may be, it cannot but be admitted that our present knowledge as to what diastatic action really may be is incomplete and vague in the extreme. Possibly the elucidation of many of the difficulties will follow the preparation of a pure enzyme.

One difficulty encountered in studying the enzymes is the multitude of names which a single enzyme may possess, *e.g.* on p. 51 we are told that sucrase is variously called "glucose ferment, cytozymase, zymase and invertin." The chief reason for this diversity of names is that different investigators, having obtained from different sources a diastase capable of transforming cane sugar into invert sugar, have often been under the impression that they have come across a new diastase and have therefore invented a name for it.

Chapters v. and vi. deal with sucrase from a theoretical aspect, and chapter vii., on the fermentation of molasses, introduces us to the technical portion of the work. Although sucrase is not prepared commercially, it plays a very important part in fermentation, especially in the manufacture of alcohol from molasses.

Dr. Effront has evidently studied the technical part of the question with the same care which he has devoted to the scientific side. As a consequence the chapters on the technology of the enzymes should be very valuable to those interested in this branch of the subject. The space at our disposal forbids us to more than briefly notice some of the important applications of enzymic fermentation. There is an interesting chapter on "Panary Fermentation," and here one cannot but be struck by the fact that although the art of bread-making is one of great antiquity, yet we know very little as to what really does take place in the process of bread-making.

Chapter xviii. deals with the industrial application of "maltase" (the ferment of maize, which also occurs in small quantities in yeast) and the manufacture of glucose.

Chapter xxi. should be of great interest to chemists, as it treats of the "Ferments of Glycerides and Glucosides." Among the various enzymes here discussed, we notice "lipase," the active principle of the pancreatic juice, "emulsin," which occurs in almonds, and "erythrozyme," the ferment contained in the madder root. This chapter might with advantage have been extended, but, unfortunately, our knowledge of these very interesting substances is not yet very far advanced.

In conclusion, we must not forget the translator, Mr. Samuel C. Prescott, who has carried out his labours in a most satisfactory manner. F. MOLLWO PERKIN.

OUR BOOK SHELF.

Astronomischer Jahresbericht. By Walter F. Wislicenus. Band iii. Pp. xxxi + 671. (Berlin: Georg Reimer, 1902.)

THE value of this work to astronomers and others interested in astronomical matters is now so well known, in spite of this being only its third appearance, that the present issue will be warmly welcomed. In the compilation of such an undertaking as this, Dr. Wislicenus and his co-workers are to be heartily congratulated, for they have brought together a very great number of most useful references and excellent brief extracts of all the more important publications of the past year. The volume now contains 671 pages, and the compiler informs us that this will probably be about its normal size. The second volume contained 552 references more than the first one, and the one before us shows an excess over the second by 193 references. This latter excess was chiefly due to the great number of papers on Nova Persei, which required 228 references alone. In future, to keep down the number of such references, the compiler proposes to include under one reference all those publications which appear during a year under the same heading and by the same author. This seems a very rational suggestion.

It may be mentioned that references are not only given to all the original publications, but also to all translations of such publications and astronomical articles which have appeared in various quarters. Thus, to take a case in point, we find that the communication by Dr. J. Hartmann to the *Sitz. der Kgl. preuss. Akademie der Wiss. zu Berlin* on "The movement of the Pole Star in the line of sight" was translated into English in the *Astrophysical Journal*, and was noticed in *Sirius*, *Die Natur*, *Astronomische Rundschau*, *Das Weltall* and the *Revue Scientifique*, their respective references being added in each case.

The book concludes with a capital index of names and brief tables of errata to the second and present volume In addition to those mentioned in the present volume, which, by the way, are remarkably few in number considering the work involved, may be added "Norman" instead of "Normann" in references Nos. 1454 and 2131, and "nächste Maximum" instead of "jetzige Minimum" in reference number 1510.

In conclusion, it is hardly necessary to point out that no astronomical observatory or similar institution should be without this volume, which embodies in it all that relates to the recent progress of astronomical science, not only in this country, but over the whole world. That the work has in its third year become so complete is due to the untiring labours of Dr. Wislicenus and his co-compilers, and it is hoped that such may in the future be lightened by the endeavour of all interested in such a useful undertaking to remember to send them separate copies, reprints, &c., of published papers.

W. J. S. LOCKYER.

Elements of Metaphysics. By J. S. Mackenzie. Pp. xv + 172. (London: Macmillan and Co., Ltd., 1902.) Price 4*s*. 6*d*.

PROF. MACKENZIE is to be congratulated on having produced an exceedingly useful little book of a kind which has no precise counterpart in our current philosophical literature. Within the compass of less than two hundred small pages he deals very suggestively with the nature of the metaphysical problems, the methods of metaphysical science and its relation to the rest of our theoretical and practical interests, science in general, art, ethics, and religion. The aim of his discussion is not so much to indicate conclusions as to lead his reader to comprehend the nature of the problems to be solved and the methods of solution which are at our command. Hence the beginner in philosophy could hardly have a better introduction to what is, after all, the main business of philosophy, the practice of thinking intelligently for himself on the ultimate problems of knowledge. So far as the author's own conclusions in philosophy are put forward, they indicate a rare catholicity of view with a certain bias in favour of the line of thought, represented by Aristotle and Hegel among the great names of metaphysics, which insists upon development as the key to the understanding of the forms of existence. As might be expected from his choice of philosophical masters,

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Prof. Mackenzie is an idealist in his general position, though he evidently realises the difficulties which beset an over-hasty idealism, and states his result in an avowedly tentative form. A. E. T.

Histoire des Mathématiques dans l'Antiquité et le Moyen Age. Par H. G. Zeuthen. Traduite par J. Mascart. Pp. xvi + 296. (Paris: Gauthier-Villars, 1902). Price fr. 7.

THIS translation of Prof. Zeuthen's well-known and deservedly popular work has been revised by the author, and several interesting notes have been added by M. Paul Tannery. The greater part of the volume deals with the mathematics of the Greeks, especially their geometry; the Elements of Euclid, in particular, are analysed in considerable detail, and discussed with intelligence and sympathy. Conservatives who still rally to the cry of "Euclid, and nothing but Euclid," may be respectfully invited to study, with the help of such comments as Prof. Zeuthen's, the actual text of the Elements, which is now easily procurable in Heiberg's excellent edition. It ought, on the one hand, to increase their admiration of the Greek geometer, and, on the other, to convince them of the absurdity of supposing that a garbled travesty of a portion of his work is the best introduction to geometry to put into the hands of the English schoolboy. Another interesting section is that which deals with the mathematics of the Arabs. It is difficult to claim for them any very substantial contributions to the science; but they showed themselves apt pupils both of the Greeks and of the Indians, they kept the study of mathematics alive when Christian Europe was passing through its darkest age of ignorance and superstition, and they powerfully helped on the subsequent revival. To Moslem scholars, and their enlightened rulers, modern Europe owes a debt which is not always sufficiently realised. M.

A la Conquête du Ciel! Contributions Astronomiques de F. C. de Nascius, en Quinze Livres. Livre Deuxième (fascicule 6 et dernier.) Pp. 84. (Nantes: Imprimerie-Libraire, Guist'hau, 1902.)

M. F. C. DE NASCIUS has favoured us from time to time with copies of his astronomical contributions, which are to extend when complete to fifteen volumes. Since each volume consists of numerous parts, it will be easily understood that no inconsiderable task awaits the reader who aspires to a complete mastery of the author's methods and teaching. Only one small part of the second volume lies before us, but we confess that we are utterly unable to comprehend its purpose or to do justice to the ingenuity that apparently underlies its construction. The general conception seems to be remotely connected with Bode's law, but is far more difficult of apprehension, for with this is connected a discussion of the "triangle of divine harmony," while over the whole hovers a bewildering but awe-inspiring theme which is expressed as algorithmic. It will, perhaps, be sufficient to say that the object of the author, if object he has, is by some simple manipulation of figures to produce quantities that shall approximate to various astronomical constants, such as the periods and distances of the planets. For example, he sets out to establish or reproduce the period of sunspots, which he gives at 11·11 years. The triangle of divine harmony is, we are assured, admirably adapted for this species of discussion. This triangle happens, fortunately, to be right-angled, and two sides have the values 69 and 17·89. There is a good deal about the number 69, which we are very solemnly assured is equal to 64 + 5, and it is no doubt entirely one's own fault if he fails to correctly apprehend its true significance, but 17·89 seems to be introduced here for the first time, at least in this volume, and one may be excused if he fails to perceive its actual bearing. Our author handles these quantities in the following way. The area of the divine triangle is first found, this is then doubled to get a parallelogram, and the side of a square found the area of which is equal to the tenth part of that parallelogram. This side has for its numerical value 11·110! and the author congratulates himself on his success.

For many years, we are afraid, M. de Nascius has laboured on similar lines, which are destined to bring him or his readers little profit, but which he will no doubt pursue so long as he can trace his figures. It is nearly thirty years, he tells us, since he first placed a hesitating foot on the path which was destined to lead him to such brilliant discoveries. Let us hope that he has been frequently cheered by finding some close coincidence between his calculations and observed facts, and that his delight has been as keen as that experienced by other physicists who have trod a more legitimate road and been led to more valuable results.

LETTERS TO THE EDITOR.

The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.*]

Mr. Marconi's Results in Day and Night Wireless Telegraphy.

READING a brief account of these results in the *Times* of June 14, I perceive that Signor Marconi advances in explanation of the greater distance at which night signals were received, that the day signalling is affected by diselectrification of the transmitting elevated conductor.

If—as I gather—Signor Marconi is referring to his observations made at positions in the Atlantic, west of England, the waves travelling westward, may not æther drift in the earth's orbital path be concerned in producing the effects observed?

The waves advancing against the orbital æther stream in the day time, with it at night, might be supposed to give rise to conditions analogous to those which affect the transmissibility of sound against or with a high wind. It will assist if we assume a retarded æther drift near the earth's surface and free motion above. But still, the difficulty in this explanation resides in the very great magnitude of the effects observed.

I write merely by way of suggestion, and in very considerable ignorance of almost every particular involved in this explanation.

J. JOLY.

Geological Laboratory, Trinity College, Dublin, June 17.

Remarkable Sunsets at Madeira.

THE last few evenings we have witnessed here some beautiful sunsets, closely resembling the sunsets observed after the Krakatoa eruption, which I remember well, *i.e.* there is the same large area of beautiful pink haze in the west and high up in the sky at and immediately after sunset. The first sunset which I felt certain was of the above character I noticed on Friday, June 6. On June 10 and yesterday the display was particularly striking. There were indications, I believe, of the pink glow on one or two evenings before June 6, but as there were a good many clouds about it was difficult to feel certain of the special character of the sunsets. F. W. T. KROHN.

Funchal, Madeira, June 12.

THE INSTITUTION OF ELECTRICAL ENGINEERS' DEPUTATION ON ELECTRICAL LEGISLATION.

WE published an article a short time ago (NATURE, vol. lxvi. p. 35) on the report of the committee appointed by the Institution of Electrical Engineers to inquire into the cause of this country's backwardness in electrical industries, and stated that it had been decided to ask the Prime Minister to receive a deputation on the subject. This deputation, after being once or twice postponed, waited upon the President of the Board of Trade, the Right Hon. Gerald W. Balfour, M.P., on

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